FYI Fluor Your Information
In This Issue
May 16, 2005 Volume 3, No. 20

Improvements noted in reducing chromium in groundwater

Fluor Hanford's Groundwater Remediation (GWR) Project is marking success in reducing the levels of chromium contamination in groundwater in the 100-H Area. The project is still striving to reach the remedial action objective based on the Environmental Protection Agency's ambient Water quality Standard. The goal is to reduce chromium in the groundwater before it reaches the Columbia river to levels not exceeding twice the ambient Water quality Standard (22 parts per billion - ppb). This level is expected to be protective of salmon and other aquatic life in the river. Yet, for the first time in 50 years, the contaminant has been reduced to the levels approved for drinking water (100 ppb).

While Hanford groundwater is not a source of drinking water and does not affect offsite sources of drinking water, chromium contamination can adversely affect the health of juvenile salmon; therefore removing the chromium is considered beneficial to the nearby spawning beds in the Columbia River.

"Pump-and-treat" operations under way since 1994 have now reduced the chromium contamination levels to less than 100 ppb in all parts of the 100-H Area, and to below 50 ppb in all but a small area between the 100-H reactor and the Columbia River. The pump-and-treat program in the 100-H Area removed more than 34 kilograms of chromium in the past 11 years.

"We are very pleased and excited about the data we are gathering today in the 100-H Area," said Dick Wilde, vice president, GWR Project. "We know we've achieved the acceptable cleanliness standard for drinking water, and we're continuing to pump and treat the remaining contamination to drive that level even lower. This is good news for the Columbia River and the entire regional environment."

Chromium contamination entered the groundwater in Hanford's 100 Area during operation of the production reactors. Sodium dichromate was added to filtered river water before it was pumped through the reactors to cool them during the irradiation process. The sodium dichromate was used to prevent the aluminum process tubes in the reactors from corroding.

According to Wilde, Fluor plans to continue pumping in the 100-H Area into 2006, striving toward the aquatic water safety standard considered ideal to support fish in a healthy streambed.

Hanford's 100-H Area, located near the northernmost portion of the main Hanford Site – sometimes known as the "horn" – borders some of the most important and prolific salmon spawning areas in the United States. The Hanford Reach of the Columbia River – the 51-mile stretch of river directly downstream from Vernita – has long been documented to be particularly important habitat for salmon, steelhead and other fish species. Fish biologists at Pacific Northwest National Laboratory have confirmed that, within the Hanford Reach, salmon preferentially spawn in the vicinity of the 100-H Area, making water cleanup there even more important.

Six extraction wells remove contaminated groundwater from the 100-H Area, and send it to a treatment facility where it is processed through vessels filled with a media that removes the chromium. After it is treated, the water is returned to the ground under the 100-H Area, where it is monitored by 4 compliance wells, 18 monitoring wells, and 7 aquifer tubes. Aquifer tubes are multiple shallow sampling tubes installed in adjacent holes at regularly spaced locations. The tubes are used to monitor contaminant concentrations in near-surface depths along the riverbank.

Today, one monitoring well in the 100-H Area shows secondary contaminant levels of tritium, uranium, and nitrates above drinking-water standards, and a few wells show strontium-90 concentrations above the EPA standard. Seven major chromium liquid waste sites have already been remediated, and all are planned to be cleaned up by 2010. Remediation and re-vegetation of solid waste sites in the 100-H Area also is scheduled to be completed in 2010. In addition, a major solid-waste site between 100-H and 100-D Areas, where sodium dichromate drums were crushed and left, has been cleaned and closed.

Michele Gerber, Communications

File Photo

Removing chromium contamination from groundwater benefits spawning beds.

Published in partnership with AdvanceMed Hanford